WHAT IS CLAIMED IS:

1.   A system for blending a source color value with at least one color value

using a blend value, the system comprising:

  a source register for storing a source color value, the source register having

    inputs and outputs, the inputs of source register coupled to receive a

    source color value;

  a blend register for storing a blend value, the blend register having inputs and

    outputs, the inputs of source register coupled to receive a blend value;

  a composite destination generator having inputs and outputs, the composite

    destination generator for producing a composite destination color value,

    the inputs of the composite destination generator coupled to receive a

    plurality of destination color values; and

  a blending unit having inputs and outputs, the blending unit coupled to the

    output of the source register, the output of the blend register and the

    output of the composite destination generator, the blending unit

    producing a blend result from the source color value, the blend value and

    the composite destination color value.

2.   The system of claim 1, wherein the composite destination generator

further comprises:

3   an accumulator having a plurality of inputs and output for summing a plurality

4   of destination color values, the plurality of inputs coupled to receive

5   respective destination color values; and

6   a divider having a first input, a second input and an output, the divider

7   generating the composite color value, the first input coupled to the output

8   of the accumulator, the second input coupled to receive a value indicating

9   the number of color values being combined.

1   3.   The system of claim 1, wherein the composite destination generator

2   further comprises and adder coupled to receive a pixel mask signal.

1   4.   The system of claim 1, wherein the divider is a group of shift and add

2   registers.

1   5.   The system of claim 2, wherein the composite destination generator

2   further comprises a plurality of destination registers, each of the destination registers

3   storing a respective sub-sample of the destination color for a pixel, each of the

4   destination registers having an input and an output, the inputs of the destination

5   registers coupled to receive respective destination sub-sample color values, the outputs

6   of the destination registers coupled to respective inputs of the accumulator.

1   6.   The system of claim 5, wherein the number of destination registers is

2   eight.

7.   The system of claim 1, wherein blending unit further comprises:

a first multiplier having inputs and outputs, the first multiplier coupled to the

output of the source register and the output of the blend register, the first

multiplier generating a first portion of the blend result;

a subtracter having inputs and outputs, the subtracter coupled to the output of

the output of the blend register, the subtracter generating a value for

blending the destination color;

a second multiplier having inputs and outputs, the second multiplier coupled to

the output of the subtracter and the composite destination generator, the

second multiplier generating a second portion of the blend result; and

an adder having inputs and an output, the inputs coupled to output of the first

multiplier and the second multiplier for receiving the first portion and the

second portion, the adder summing the first and second portion to

produce the blended result.

8.   The system of claim 1, further comprising a box filter having inputs and

outputs, the input of the box filter coupled to the output of the over sampling buffer,

and the output of the box filter coupled to the input of a frame buffer interface.

9.   The system of claim 1, further comprising an over sampling buffer having

a first set of inputs/outputs, a second set of outputs, and a third set of inputs/outputs,

the first set of inputs/outputs of over sampling buffer coupled a frame buffer, a second

set of outputs of the over sampling buffer coupled to the source register, and the third

set of inputs/outputs coupled between the over sampling buffer and the alpha blending

unit.

1   10.   A method for performing blending of a pixel represented by a plurality of

2   destination sub-samples with a source color value, the method comprising the steps of:

3   determining a number of sub-samples to be blended;

4   retrieving a destination color value for each sub-sample;

5   adding the retrieved destination color value for each sub-sample to produce a

6   sum;

7   generating a composite destination color value;

8   retrieving a source color value;

9   retrieving a blend value; and

10   generating a blended result using the retrieved source color value, the blend

11   value and the composite destination color value.

1   11.   The method of claim 10, wherein each pixel is represented by a plurality

2   of destination sub-samples and the method further comprising the steps of:

3   selecting a pixel for blending; and

4   determining a subset of the plurality of the destination sub-samples to be

5   blended.

1   12.   The method of claim 10, wherein the step of generating a composite

2   destination color value is performed by dividing the sum by the determined number of

3   sub-samples to be blended.

13.   The method of claim 10, wherein the step of generating the blend value

further comprises the steps of:

multiplying the source color value by the blend value to produce a first portion;

subtracting the blend value from one;

multiplying the composite destination color value by the subtracted value to

    produce a second portion; and

adding the first and second portions to produce the blend result.

14.   The method of claim 10 further comprising the step of storing the blended

result back in the frame buffer as the destination color for each of the retrieved sub-

samples.

15.   The method of claim 10 further comprising the step of box filtering the

blended result.

16.   An apparatus for performing blending of a pixel represented by a

plurality of destination sub-samples with a source color value, the apparatus

comprising:

means for determining a number of sub-samples to be blended;

means for retrieving a destination color value for each sub-sample;

means for adding the retrieved destination color value for each sub-sample to

    produce a sum;

means for generating a composite destination color value;

means for retrieving a source color value;

10   means for retrieving a blend value; and

11   means for generating a blended result using the retrieved source color value, the

12   blend value and the composite destination color value.

1   17.   The apparatus of claim 16, wherein each pixel is represented by a plurality

2 of destination sub-samples and the apparatus further comprises:

3   means for selecting a pixel for blending; and

4   means for determining a subset of the plurality of the destination sub-samples to

5   be blended.

1   18.   The apparatus of claim 16, wherein the means for generating a composite

2 destination color value divides the sum by the determined number of sub-samples to be

3 blended.

1   19.   The apparatus of claim 16, wherein the means for generating the blend

2 value further comprises:

3   means for multiplying the source color value by the blend value to produce a

4   first portion;

5   means for subtracting the blend value from one;

6   means for multiplying the composite destination color value by the subtracted

7   value to produce a second portion; and

8   means for adding the first and second portions to produce the blend result.

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1   20.   The apparatus of claim 16 further comprising means for storing the

2   blended result back in the frame buffer as the destination color for each of the retrieved

3   sub-samples.

1   21.   The apparatus of claim 16 further comprising means for box filtering the

2   blended results.